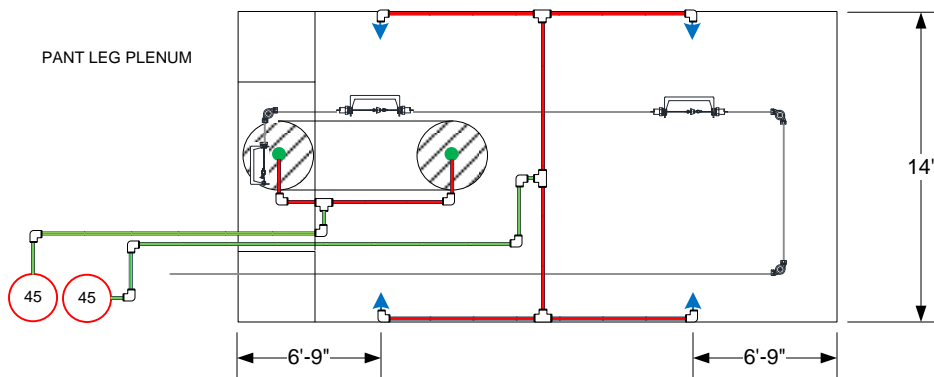


TANDEM 45 LB SYSTEM

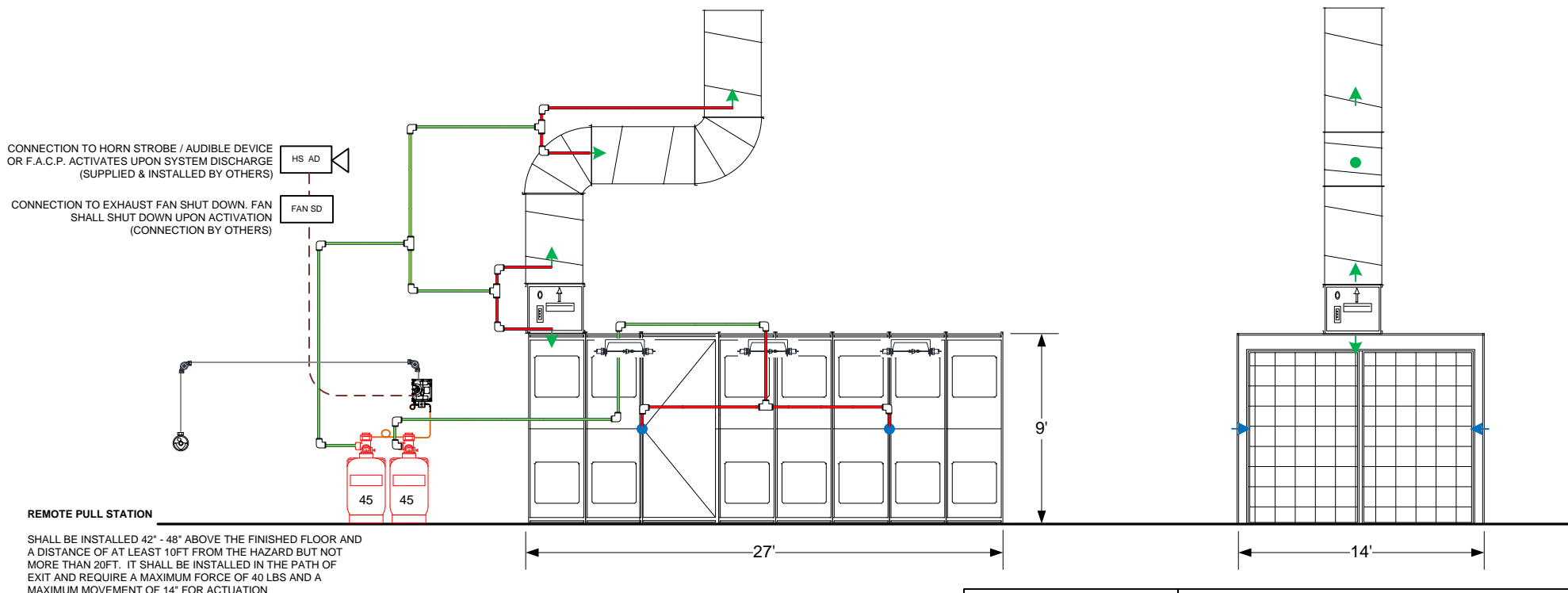


PIPE SIZES

3/4" Ø PIPE

1" Ø PIPE

FUSIBLE LINKS RATED
AT 165 DEG F



NOZZLE LEGEND

↓	DUCT / PLENUM NOZZLE - (D/P)
↓	HIGH - OVERHEAD NOZZLE - (S)
↓	TOTAL - FLOOD NOZZLE - (TF)

SEE PIPING LAYOUT AND LIMITATIONS
ON PAGES 2 and 3

PRE-ENGINEERED SYSTEM SHOP
DRAWING ONLY - NOT TO SCALE

EXAMPLE DRAWINGS PROVIDED BY: <http://www.firesystemdrawings.com>

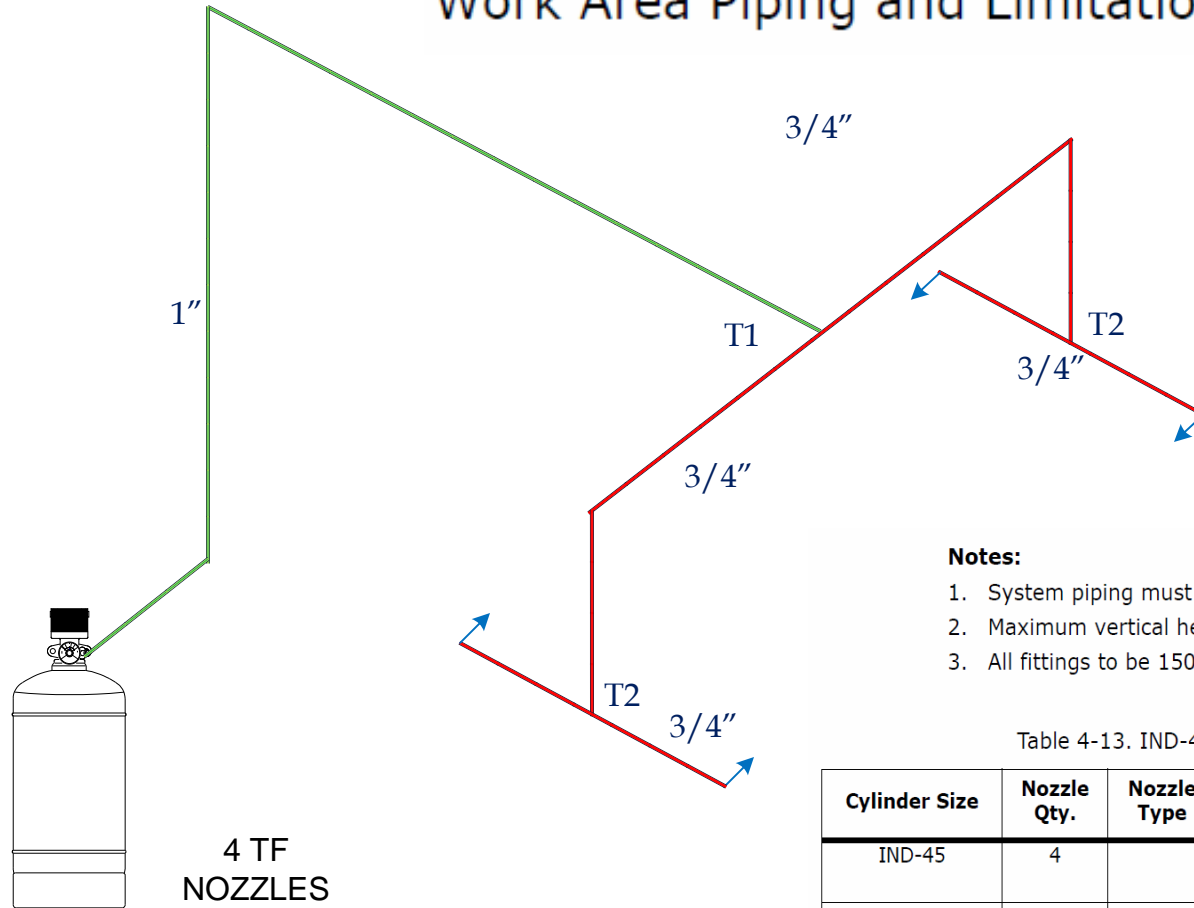


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SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	1 OF 8

Work Area Piping and Limitations for Side-Wall Applications



PIPE SIZES	
—	3/4" Ø PIPE
—	1" Ø PIPE

Notes:

1. System piping must be balanced.
2. Maximum vertical height of nozzles is 9 ft., 2 in. (2.8 m) above the base of the cylinder.
3. All fittings to be 150 lb. class minimum.

Table 4-13. IND-45, Four Nozzles: Work Area, Side-Wall Application

Cylinder Size	Nozzle Qty.	Nozzle Type	Piping Section	NPT Pipe Size	Maximum Pipe Length	Maximum Number of Elbows
IND-45	4		Cylinder to T1	1-inch	60 ft. (18.3 m)	8
			T1 to T2	3/4-inch	10-1/2 ft. (3.2 m)	1
		TF	T2 to Nozzle	3/4-inch	11 ft. (3.4 m)	2



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SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	2 OF 8

DUCT & PLENUM ISOMETRIC & PIPING LIMITATIONS

PIPE SIZES

3/4" Ø PIPE

1" Ø PIPE

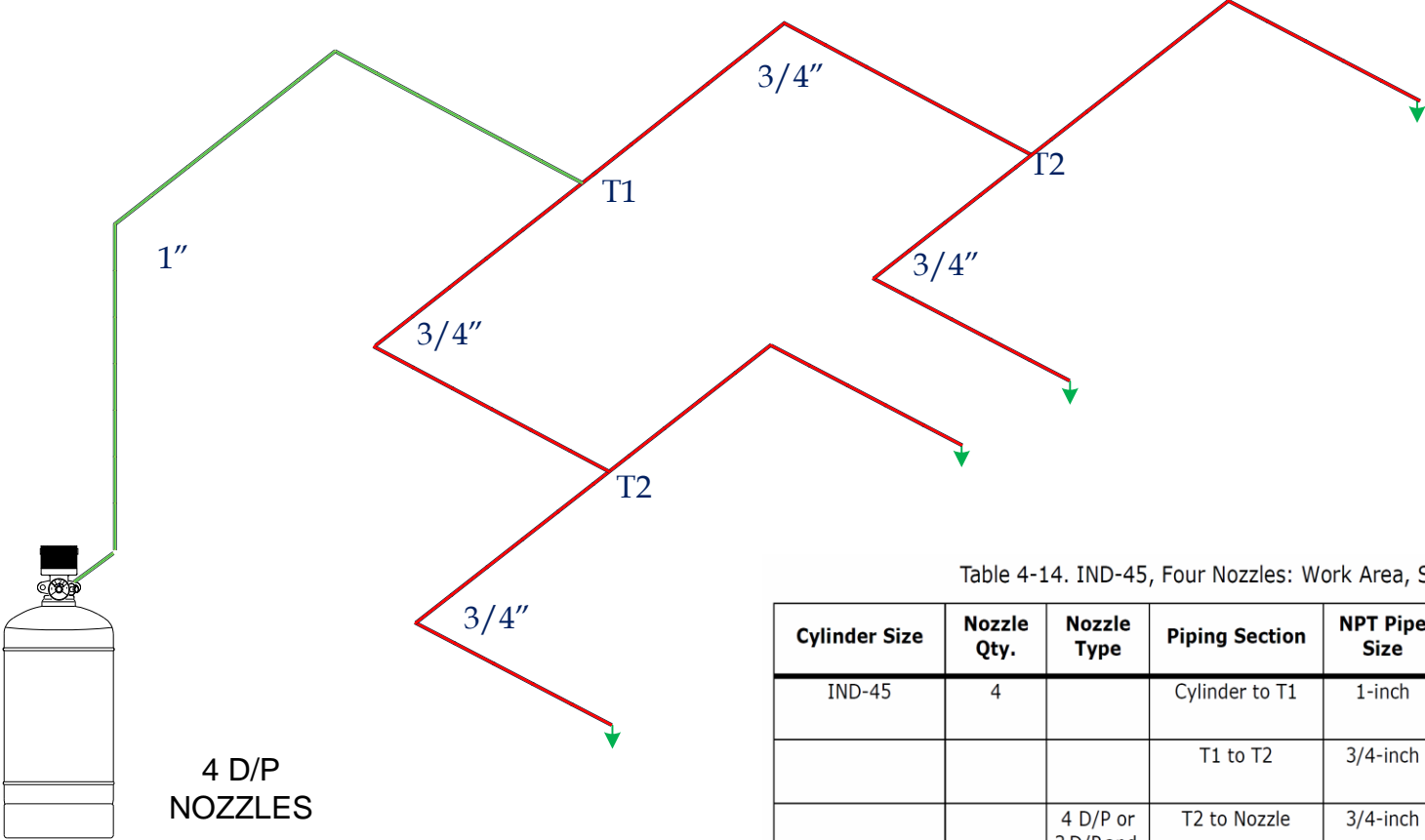


Table 4-14. IND-45, Four Nozzles: Work Area, Side-Wall Application

Cylinder Size	Nozzle Qty.	Nozzle Type	Piping Section	NPT Pipe Size	Maximum Pipe Length	Maximum Number of Elbows
IND-45	4		Cylinder to T1	1-inch	41 ft. (12.5 m)	7
			T1 to T2	3/4-inch	11 ft. (3.4 m)	3
		4 D/P or 3 D/P and 1 3-Way	T2 to Nozzle	3/4-inch	11 ft. (3.4 m)	3

- Notes:
- 1 System piping must be balanced
 - 2 Maximum vertical height of nozzles is 24 ft (7 3 m) above the base of the cylinder
 - 3 All fittings to be 150 lb class minimum



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SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	3 OF 8

4-5.1.3 EXHAUST DUCT

The Exhaust Duct is a fan-powered air channel that draws air through the work area, the plenum and out through the duct. The D/P Nozzle will protect either round or rectangular ducts up to 28 ft. (8.5 m) in length (see Figure 4-13).

Any change in duct direction or additional length requires an additional D/P Nozzle. The duct nozzle must be centered at the duct entrance, and pointed in the direction of the air flow. The tip of the duct nozzle must be within 6 in. (152 mm) of the duct entrance. The maximum diameter of a round duct is 48 in. (1219 mm); the maximum perimeter for a rectangular duct is 150.8 in. (3830 mm) and the maximum diagonal is 48 in. (1219 mm). See Table 4-4 for rectangular duct dimensions.

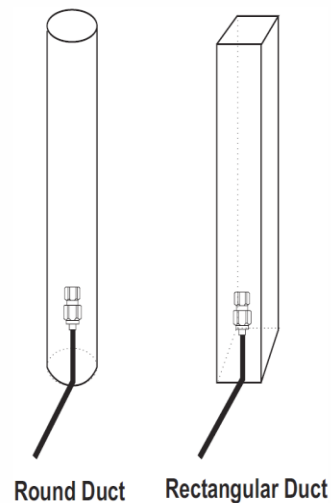
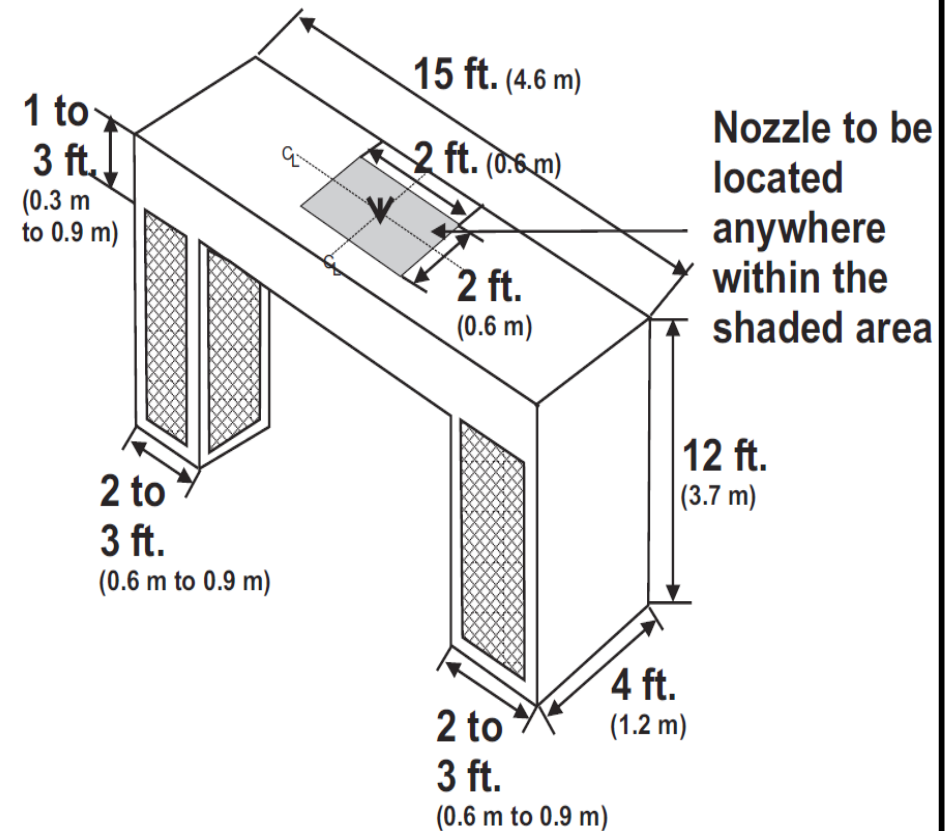


Figure 4-13. Exhaust Duct with Nozzle Placement



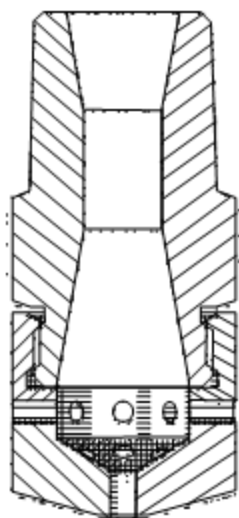
Cross Flow Drive Thru



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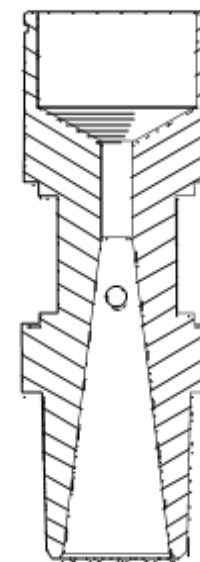
SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	4 OF 8



TOTAL-FLOODING NOZZLE, PIN 83-100005-001

The Total-Flooding (TF) Nozzle, shown in Figure 3-13, is designed to discharge dry chemical throughout an enclosed volume. The TF Nozzle is used to protect the work area volume for enclosed spray booth applications.

Each TF Nozzle is factory-equipped with a blow-off cap (PIN 06-250099-067) to protect the nozzle orifices and prevent moisture buildup in the discharge piping.



DUCT/PLENUM (DP) NOZZLE,P/N 83-100006-001

The Duct/Plenum (DP) Nozzle, shown in Figure 3-14, is designed to discharge dry chemical throughout an exhaust duct or plenum area.

Each DP Nozzle is factory-equipped with a blow-off cap (P/N 264742) to protect the nozzle orifices and prevent moisture buildup in the discharge piping.



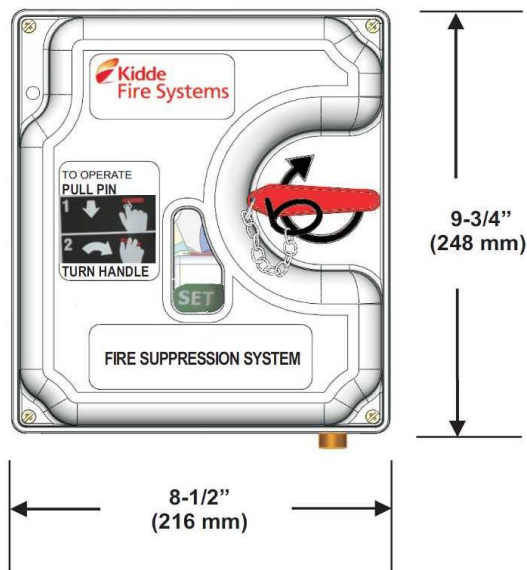
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BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	5 OF 8

Kidde XV™ Control System P/N: 87-120099-002

NOTES




1. Braided high pressure nitrogen tubing (P/N 87-120045-00X), is required to connect the XV Control System to the System Valve Actuator (SVA) when the XV Control System is cylinder mounted.
2. Copper tubing shall be 1/4-inch O.D. x 0.031-inch wall high pressure tubing.
3. When Control System is cylinder mounted and two or more cylinders are being actuated, a minimum of 5 ft. (1.52 m) of 1/4-inch O.D. x 0.031-inch wall tubing shall be used for actuation lines.
4. When Control System is wall mounted, a minimum of 5 ft. (1.52 m) of 1/4-inch O.D. x 0.031-inch wall tubing shall be used in the overall actuation line.
5. High pressure nitrogen tubing (P/N 87-120045-00X) may be used in place of copper tubing, not to exceed a maximum length of 30 feet (9 m).
6. In every system, either single cylinder or multiple cylinder, a 1/8-inch NPT plug or vent check (P/N WK-877810-000) shall be used in the outlet port of the last System Valve Actuator(s) in the actuation line.
7. A maximum of 2 Pressure Switches (P/N 486536) may be used in the actuation line.

Table 4. Actuation Parameters for IND Dry Chemical for Vehicle Spray Booths

Operating Temperature Range	Number of Extinguishing System Cylinders	Maximum Total Length Copper Actuation Tubing	Minimum Total Length of Copper Actuation Tubing
0°F to 120°F (-18°C to 49°C)	1-8	200 ft. (60.96 m)	5 ft. (1.52 m)
	9-15	160 ft. (48.76 m)	
	16-20	140 ft. (42.67 m)	

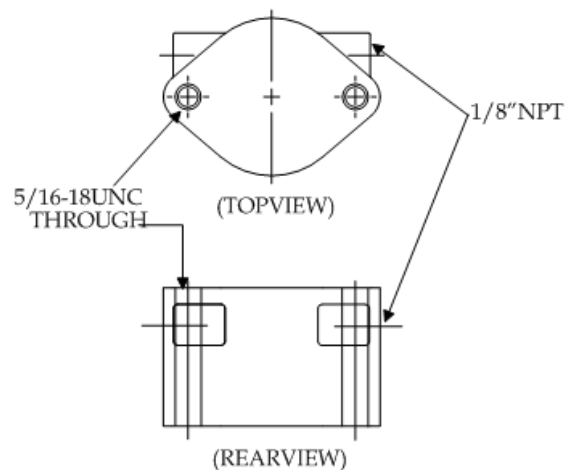
EXAMPLE DRAWINGS PROVIDED BY: <http://www.firesystemdrawings.com>

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		SOME RESTAURANT 123 MAIN STREET BREMERTON, WA 98337			
	SIZE	FSCM NO	DWG	REV	
			FIRE SYSTEM		
SCALE	N/A		SHEET	6 OF 8	

SYSTEM VALVE ACTUATOR (SVA)

PART NUMBER 87-120042-001

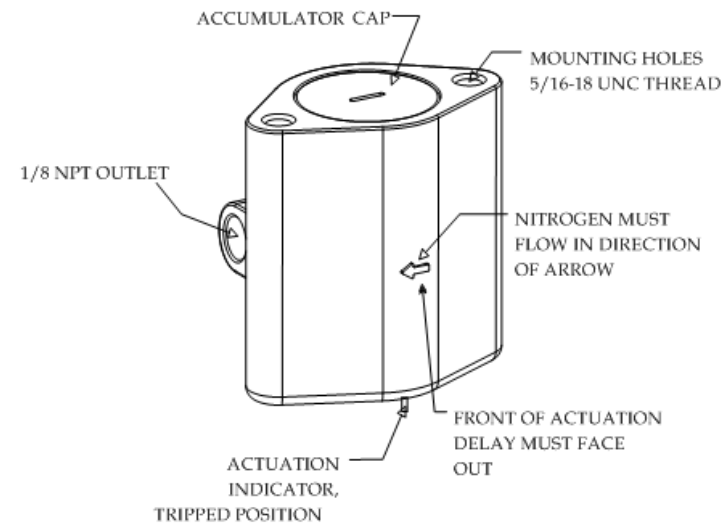
A System Valve Actuator (SVA) is mounted to every dry chemical cylinder valve assembly located on the system. The SVA has inlet and outlet ports for low profile tubing runs, and is also equipped with a spring loaded plunger that locks the piston in the discharged position, ensuring complete discharge of the cylinder(s) contents.



ACTUATION DELAY ASSEMBLY

PART NUMBER 83-100035-001

The Actuation Delay Assembly allows the Microswitch(es) in the XV Control System to shut down the power supply to the connected blowers, pumps, etc., before discharge begins (see Figure 3-12). The Actuation Delay Assembly mounts directly to the XV Control System housing, and connects into the XV Control System using the High-Pressure Nitrogen Tubing (PIN 87-120045-001). The output is applied to the SVA using copper tubing.



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SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	7 OF 8

FLOW DIVISION

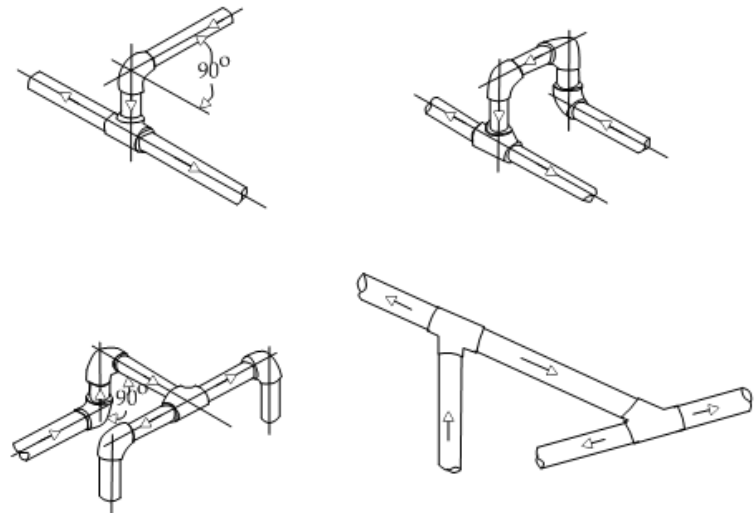
When the flow of a two-phase fluid changes in direction, such as at an elbow, the flow change can cause a separation of the nitrogen gas and the dry chemical powder. In order to ensure the proper flow division of dry chemical at each tee, certain minimum pipe lengths must be observed when approaching a tee following a change in flow direction.



MINIMUM LENGTHS 20 PIPE DIAMETERS	
PIPE SIZE	MIN-LGTH-20D
1"	20"
3/4"	15"



Distribution Systems Requiring
Minimum Pipe Lengths



Distribution Systems Requiring
NO Minimum Pipe Lengths

4-5.2.2 MATERIAL FOR PIPE AND FITTINGS

All piping must be Schedule 40, hot dipped, galvanized steel pipe, and all fittings must be, at a minimum, standard weight (150 lb. class). Examples of acceptable fitting materials include hot dipped, galvanized malleable iron, ductile iron or steel. Couplings and unions may be used where necessary, and reducing bushings or reducing tees can be used for changes in pipe diameter.

Note: Black steel pipe and fittings can be used in relatively noncorrosive atmospheres.

EXAMPLE DRAWINGS PROVIDED BY: <http://www.firesystemdrawings.com>



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SIZE	FSCM NO	DWG	REV
		FIRE SYSTEM	
SCALE	N/A	SHEET	8 OF 8